

PATENT ABSTRACTS OF JAPAN

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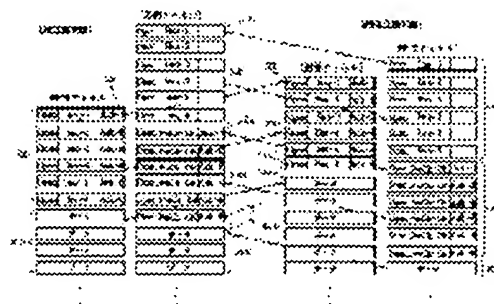
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YAMASHINA MASAKI

(54) DATA LINK SETUP METHOD, INTERRUPTION METHOD AND CONTROL METHOD

(57)Abstract:

PROBLEM TO BE SOLVED: To surely and quickly set up and interrupt a data link by using a transmission frame by which a transmission timing is confirmed in the transmission reception for confirmation with respect to a setup request or an interrupt request.

SOLUTION: A data link setup request side sends repetitively a plurality of 1st transmission frames F1 including different setup request numbers Req-1 to Req-6 to a setup requested side. Upon the receipt of the transmission frame F1, the setup requested side sends a transmission frame F2 including setup acknowledge numbers Ack-1 to Ack-6 corresponding to the setup request numbers Req-1 to Req-6. Upon the receipt of the transmission frame F2, the setup request side sends repetitively a transmission frame F3 including a flag FwCh denoting the understanding of the setup acknowledge numbers Ack-1 to Ack-6 till its own transmission timing, and the setup requested side uses the timing when the transmission frame F3 at first for its own data transmission timing. Thus, a round trip delay required for re-transmission control of an error frame is acquired simultaneously by both the parties when the link is set up so as to set up the link quickly.



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CLAIMS

[Claim(s)]

[Claim 1] In the data link establishment approach of transmitting and receiving a transmission frame in advance of the bidirectional data communication between communication devices including the wireless section, and establishing a data link the establishment requestor side of a data link Two or more first transmission frames containing an establishment demand number which is different to an established requestor side, respectively are repeated, and it transmits. This established requestor side If this first transmission frame is received, two or more second transmission frames which contain the establishment check number corresponding to the establishment demand number contained in each transmission frame concerned and its establishment demand number, respectively will be transmitted. If this second transmission frame is received, said establishment requestor side will repeat two or more third transmission frames which wrote in the flag which replaces with said establishment demand number contained in this transmission frame, and shows the comprehension to said establishment check number, respectively to its data transmit timing, and will transmit. Said established requestor side is the data link establishment approach characterized by making into one's data transmit timing timing which received this third transmission frame first.

[Claim 2] Said establishment requestor side from the transmit timing of said first transmission frame The time difference to the receiving timing of said second transmission frame with the establishment check number corresponding to the establishment demand number of the transmission frame concerned is measured. This measurement result is accumulated as criteria for resending control. Said established requestor side The time difference from the transmit timing of said second transmission frame to the receiving timing of said third transmission frame with the flag corresponding to the establishment check number of the transmission frame concerned is measured. The data link establishment approach according to claim 1 accumulated as criteria for resending control of this measurement result.

[Claim 3] In the data link cutting process which transmits and receives a transmission frame in advance of termination of the bidirectional data communication between communication devices including the wireless section, and cuts a data link the disconnect-request side of a data link Two or more fourth transmission frames containing a disconnect-request number which is different to a disconnect-requested side, respectively are repeated, and it transmits. This disconnect-requested side If this fourth transmission frame is received, will repeat two or more fifth transmission frames which contain the disconnect-request number contained in each transmission frame concerned, and the disconnect-confirm number corresponding to that disconnect-request number, respectively, and it will transmit. Said disconnect-request side will transmit repeatedly to the transmitting termination timing which had two or more sixth transmission frames which wrote in the flag which replaces with said disconnect-request number contained in this transmission frame, and shows the comprehension to said disconnect-confirm number, respectively set up, if this fifth transmission frame is received. Said disconnect-requested side is a data link cutting process characterized by making into one's transmitting termination timing timing which received this first transmission frame [sixth].

[Claim 4] Said disconnect-request side is a data link cutting process according to claim 3 which ends

transmission when said fifth transmission frame cannot be received even if it goes through fixed time amount after transmitting said fourth transmission frame.

[Claim 5] Said disconnect-request-ed side is a data link cutting process according to claim 3 which ends transmission when said sixth transmission frame cannot be received even if it goes through fixed time amount after transmitting said fifth transmission frame.

[Claim 6] The data-link-control approach characterized by controlling establishment and cutting of a data link by the data link establishment approach according to claim 1 or 2 or data link cutting process according to claim 3 to 5 in the data-link-control approach which controls establishment and cutting of a data link for the bidirectional data communication between communication devices including the wireless section.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention is used for the establishment and cutting of a data link in the communication link using the transmission line where the transmission quality of a radio-transmission way and others changes.

[0002]

[Description of the Prior Art] Between communication devices, compared with the transmission line of another ISDN and cable system, generally the transmission quality is low quality and the transmission quality changes with the propagation environments between a base station and a mobile station etc. a lot in the communication link including a radio-transmission way (wireless section).

[0003] The frame with which the transmission quality may deteriorate to about 0.3%, and a bit error rate (BER) indicates a demand or check of data link establishment to be in such a case may be continuously mistaken on a radio-transmission way.

[0004] Drawing 6 and drawing 7 show the example of a frame structure at the time of the establishment of a data link used by the conventional radio. Drawing 6 is drawing showing the example of a synchronous frame structure of the conventional example, and drawing 7 is drawing showing the example of a control frame structure of the conventional example. Drawing 8 is drawing showing the establishment procedure of a data link used by the radio of the conventional example.

[0005] After carrying out a demand and a check of round trip delay and other control information required for error frame resending control using the control frame were shown to drawing 7 after repeated the synchronous request for data link establishment, having transmitted from the requestor side using the synchronous frame shown in drawing 6 in the establishment procedure of the data link of the conventional example shown in drawing 8, and the requestor side's having repeated the synchronous check over synchronous request, having transmitted and a requestor side's receiving a synchronous check, a bidirectional data link is established.

[0006] Drawing 9 is drawing showing the cutting procedure of the data link of the conventional example. The transmission frame used for the cutting procedure of a data link is the same configuration as the synchronous frame shown in drawing 6, the part of a "data link establishment demand number" becomes a "data link disconnect-request number", and the part of a "data link establishment check number" serves as a "data link disconnect-confirm number." In drawing 9 R> 9, a disconnect-request side transmits a disconnect request to a disconnect-requested side, and when a disconnect request is received, a disconnect-requested side repeats a disconnect confirm the number of regularity times, and transmits to a disconnect-request side. A disconnect-request side cuts a data link, when a disconnect confirm is received.

[0007]

[Problem(s) to be Solved by the Invention] By such conventional data link establishment approach, as mentioned above, from an establishment requestor side, the synchronous request for data link establishment is repeated, and it transmits, an established requestor side repeats the synchronous check

over synchronous request, and transmits, and after an establishment requestor side's receiving a synchronous check, a demand and check of round trip delay and other control information are carried out, and since a bidirectional data link is established, time amount becomes long after that until data transmission becomes possible.

[0008] Moreover, in the conventional data link cutting process, since the transmission quality of a radio-transmission way may deteriorate and a disconnect request and a disconnect confirm may be mistaken, it is necessary to repeat transmission of a fixed count disconnect confirm. Therefore, in spite of having completed data communication by both disconnect-request-ed [a disconnect-request side and] side, cutting of a data link may not be able to be performed.

[0009] This invention aims at offering the data link establishment approach, the cutting process, and the control approach of being carried out to such a background and performing certainly and quickly the establishment and cutting of a data link in a radio-transmission way. This invention aims at offering the data link establishment approach, the cutting process, and the control approach of using an electric wave effectively. This invention aims at offering the data link establishment approach, the cutting process, and the control approach of having been suitable for the radio method.

[0010]

[Means for Solving the Problem] The first viewpoint of this invention is the data link establishment approach, and is the data link establishment approach of transmitting and receiving a transmission frame in advance of the bidirectional data communication between communication devices including the wireless section, and establishing a data link.

[0011] The place by which it is characterized [of this invention] here the establishment requestor side of a data link Two or more first transmission frames containing an establishment demand number which is different to an established requestor side, respectively are repeated, and it transmits. This established requestor side If this first transmission frame is received, two or more second transmission frames which contain the establishment check number corresponding to the establishment demand number contained in each transmission frame concerned and its establishment demand number, respectively will be transmitted. If this second transmission frame is received, said establishment requestor side will repeat two or more third transmission frames which wrote in the flag which replaces with said establishment demand number contained in this transmission frame, and shows the comprehension to said establishment check number, respectively to its data transmit timing, and will transmit. Said established requestor side is in the place which makes timing which received this third transmission frame first its data transmit timing.

[0012] Said establishment requestor side furthermore, from the transmit timing of said first transmission frame The time difference to the receiving timing of said second transmission frame with the establishment check number corresponding to the establishment demand number of the transmission frame concerned is measured. This measurement result is accumulated as criteria for resending control. Said established requestor side It is desirable to measure the time difference from the transmit timing of said second transmission frame to the receiving timing of said third transmission frame with the flag corresponding to the establishment check number of the transmission frame concerned, and to accumulate this measurement result as criteria for resending control.

[0013] Thus, a data link can be established, without transmitting and receiving a control frame by transmitting and receiving the transmission frame for data link establishment.

[0014] That is, the transmission frame answered to the transmission frame which self transmitted can be received, and round trip delay can be measured by measuring the time amount from the transmission to reception. Therefore, a data link can be established certainly and quickly, without using the control frame for notifying run udo trip delay.

[0015] The second viewpoint of this invention is data link cutting process, and is a data link cutting process which transmits and receives a transmission frame in advance of termination of the bidirectional data communication between communication devices including the wireless section, and cuts a data link.

[0016] The place by which it is characterized [of this invention] here the disconnect-request side of a

data link Two or more fourth transmission frames containing a disconnect-request number which is different to a disconnect-request-ed side, respectively are repeated, and it transmits. This disconnect-request-ed side If this fourth transmission frame is received, will repeat two or more fifth transmission frames which contain the disconnect-request number contained in each transmission frame concerned, and the disconnect-confirm number corresponding to that disconnect-request number, respectively, and it will transmit. Said disconnect-request side will transmit repeatedly to the transmitting termination timing which had two or more sixth transmission frames which wrote in the flag which replaces with said disconnect-request number contained in this transmission frame, and shows the comprehension to said disconnect-confirm number, respectively set up, if this fifth transmission frame is received. Said disconnect-request-ed side is in the place which makes timing which received this first transmission frame [sixth] its transmitting termination timing.

[0017] Thus, a data link can be cut by transmitting and receiving the transmission frame for data link cutting.

[0018] That is, a data link can be cut certainly and quickly by receiving the transmission frame answered to the transmission frame which self transmitted. Since it can know that the other party will end transmission in the transmission frame by which repeat transmission is carried out when at least one receives even if the transmission quality of a radio-transmission way has deteriorated at this time, a data link can be cut certainly and quickly.

[0019] Or after said disconnect-request side transmits said fourth transmission frame Even if it goes through fixed time amount, when said fifth transmission frame is unreceivable, may make it end transmission, and moreover, said disconnect-request-ed side When said sixth transmission frame is unreceivable even if it goes through fixed time amount after transmitting said fifth transmission frame, you may make it end transmission.

[0020] Thereby, the transmission quality of a radio-transmission way has deteriorated greatly, and even if reception of a transmission frame is difficult, a data link can be cut certainly and quickly.

[0021] The third viewpoint of this invention is the data-link-control approach, and is the data-link-control approach which controls establishment and cutting of a data link for the bidirectional data communication between communication devices including the wireless section.

[0022] Here, the place by which it is characterized [of this invention] is located in the place which controls establishment and cutting of a data link by the above-mentioned data link establishment approach or the above-mentioned data link cutting process.

[0023]

[Embodiment of the Invention]

[0024]

[Example]

(The first example) The first example of this invention is explained with reference to drawing 1 - drawing 4. Drawing 1 is drawing showing the radio method with which the first example of this invention is applied. Drawing 2 is drawing showing the configuration of the synchronous establishment frame of the first example of this invention. Drawing 3 is drawing showing the data link establishment procedure of the first example of this invention. Drawing 4 is drawing showing the data link cutting procedure of the first example of this invention.

[0025] This invention is the data establishment approach and is the data link establishment approach of transmitting and receiving a transmission frame as shown in drawing 2 in advance of the communication device 1 which includes the wireless section as shown in drawing 1, and the bidirectional data communication between two, and establishing data links L1 and L2.

[0026] The place by which it is characterized [of this invention] here the establishment requestor side of a data link If the transmission frame F1 shown in drawing 3 as two or more first transmission frames containing establishment demand number Req-1-Req-6 which are different to an established requestor side, respectively is repeated, it transmits and this established requestor side receives this transmission frame F1 The transmission frame F2 which shows establishment demand number Req-1-Req-6 contained in each transmission frame F1 concerned and establishment check number Ack-1-Ack-6

corresponding to the establishment demand number Req-1-Req-6 to drawing 3 as two or more second transmission frames included, respectively is transmitted. If this transmission frame F2 is received, said establishment requestor side As two or more third transmission frames which wrote in flag FwCh-OK which replaces with establishment demand number Req-1-Req-6 contained in this transmission frame F2, and shows the comprehension to establishment check number Ack-1-Ack-6, respectively The transmission frame F3 shown in ***_3 is repeated to its data transmit timing, it transmits, and said established requestor side is in the place which makes timing which received this transmission frame F3 first its data transmit timing.

[0027] Said establishment requestor side measures the time difference from the transmit timing of a transmission frame F1 to the receiving timing of the transmission frame F2 with establishment check number Ack-1-Ack-6 corresponding to establishment demand number Req-1-Req-6 of the transmission frame F1 concerned. This measurement result is accumulated as criteria for resending control. Said established requestor side The time difference from the transmit timing of a transmission frame F2 to the receiving timing of the transmission frame F3 with flag FwCh-OK corresponding to establishment check number Ack-1-Ack-6 of the transmission frame F2 concerned is measured, and this measurement result is accumulated as criteria for resending control.

[0028] As shown in drawing 4 , moreover, the disconnect-request side of a data link The transmission frame F4 as two or more fourth transmission frames containing disconnect-request number Req-1-Req-6 which are different to a disconnect-request-ed side, respectively is repeated, and it transmits. This disconnect-request-ed side If this transmission frame F4 is received Repeat the transmission frame F5 as two or more fifth transmission frames which contain disconnect-request number Req-1-Req-6 contained in each transmission frame F4 concerned, and disconnect-confirm number Ack-1-Ack-6 corresponding to the disconnect-request number Req-1-Req-6, respectively, and it transmits. If this transmission frame F5 is received, said'disconnect-request side As two or more sixth transmission frames which wrote in flag FwCh-OK which replaces with disconnect-request number Req-1-Req-6 contained in this transmission frame F5, and shows the comprehension to disconnect-confirm number Ack-1-Ack-6, respectively Transmitting repeatedly to the transmitting termination timing which had ***** F6 set up, said disconnect-request-ed side makes timing which received this first transmission frame F6 its transmitting termination timing.

[0029] The first example of this invention is further explained to a detail. Each transmission frame applies the frame format shown in drawing 2 . Here, "Open" which is frame classification shows the demand and check at the time of data link establishment, and "Close" shows the demand and check at the time of data link cutting.

[0030] In the first example of this invention, "Open" is seen from self-equipment and it is defined as a link setup of a send channel (if it sees from a partner receiving channel). in the case of two-way communication, this is because it is necessary to establish an establishment requestor side and a link independent about transmission of each established requestor side.

[0031] In drawing 3 , F1 is a transmission frame for the data link establishment demand which an establishment requestor side publishes, writes in data link establishment demand number Req-1-Req-6, and is transmitted. F2 is the transmission frame which the data link establishment demand which an established requestor side publishes, and the establishment check were made to share, writes in data link establishment demand number Req-1-Req-6 and establishment check number Ack-1-Ack-6, and is transmitted.

[0032] Hereafter, the data link establishment procedure according timing to the first example of this invention is explained later on. In timing T1, an establishment requestor side transmits the transmission frame F1 which wrote in data link establishment demand number Req-1-Req-6. After an established requestor side receives the transmission frame F1 which wrote in data link establishment demand number Req-1-Req-6 The transmission frame F2 which wrote data link establishment demand number Req-1-Req-6 from an established requestor side and data link establishment check number Ack-1-Ack-6 in timing T2 is transmitted.

[0033] In timing T3 The transmission frame F2 in which establishment check number Ack-1-Ack-6 to

the transmission frame F1 (establishment demand number Req-1-Req-6) transmitted to timing T1 in the establishment requestor side and establishment demand number Req-1-Req-6 from an established requestor side were written is received. The establishment check of a data link demanded by timing T four The transmission frame F3 which wrote in the establishment check (establishment check number Ack-1-Ack-6) over the data link establishment demand (establishment demand number Req-1-Req-6) from flag FwCh-OK and an established requestor side which shows what was understood is transmitted. [0034] In an established requestor side, in timing T5, flag FwCh-OK which shows what partner equipment understood the establishment check of the data link of the receiving channel seen from an establishment check (establishment check number Ack-1-Ack-6) and the self-equipment of the data link of the send channel seen from self-equipment, i.e., the send channel from partner equipment, for is recognized by the transmission frame F3 received by timing T5', and it is judged that the bidirectional data link was established. Then, transmission of data is started from timing T5.

[0035] In an establishment requestor side, although the data link establishment check (establishment check number Ack-1-Ack-6) of the send channel seen from self-equipment is received and the transmitting-side channel is usable in timing T6', the establishment check of a receiving-side channel, i.e., flag FwCh-OK which shows that partner equipment understood the data link establishment check of a send channel, is not received. However, at the establishment requestor side, the information frame FD 1 is received by timing T6', and partner equipment has started data transmission, after checking establishment of a data link by the transceiver channel. Timing T6 to data transmission is started ignited by reception of the information frame FD 1 also from an establishment requestor side.

[0036] Or it has an establishment check number. moreover, the transmission frames F1-F3 which require or check data link establishment -- respectively -- an establishment demand number -- and -- The transmission frame F1 which contains establishment demand number Req-1-Req-6 to timing T1 in an establishment requestor side is transmitted. Since the transmission frame F2 which contains establishment check number Ack-1-Ack-6 to establishment demand number Req-1-Req-6 by timing T3 is received, it is round trip delay required for resending control of an error frame (timing T3). - (timing T1)

It can come out and measure. An established requestor side is (timing T5') similarly. - (timing T2)

It can come out and round trip delay can be measured.

[0037] Drawing 4 is drawing showing the cutting sequence of the data link by the first example of this invention. In drawing 4, F4 is a transmission frame for the data link disconnect request which a disconnect-request side publishes, writes in data link disconnect-request number Req-1-Req-6, and is transmitted. F5 is the transmission frame which the data link disconnect request which a disconnect-request-ed side publishes, and the disconnect confirm were made to share, writes in disconnect-request number Req-1-Req-6 and disconnect-confirm number Ack-1-Ack-6, and is transmitted.

[0038] In timing T1, a disconnect-request side transmits the transmission frame F4 which wrote in data link disconnect-request number Req-1-Req-6. After a disconnect-request-ed side receives the transmission frame F4 which wrote in data link disconnect-request number Req-1-Req-6 The transmission frame F5 which wrote the data link disconnect request (disconnect-request number Req-1-Req-6) and disconnect confirm (disconnect-confirm number Ack-1-Ack-6) from a disconnect-request-ed side in timing T2 is transmitted.

[0039] In timing T3 The transmission frame F5 in which disconnect-confirm number Ack-1-Ack-6 to the transmission frame F4 (disconnect-request number Req-1-Req-6) transmitted to timing T1 in the disconnect-request side and data link disconnect-request Req-1-Req-6 from a disconnect-request-ed side were written is received. The disconnect confirm of the data link demanded by timing T four The transmission frame F6 which wrote in the disconnect confirm (disconnect-confirm number Ack-1-Ack-6) to the data link disconnect request (disconnect-request number Req-1-Req-6) from the flag FwCh-OK side which shows what was understood, and a disconnect-request-ed side is transmitted.

[0040] In a disconnect-request-ed side, in timing T5, it recognizes by the transmission frame F5 which receives flag FwCh-OK which shows what partner equipment understood the disconnect confirm of the data link of the receiving channel seen from the disconnect confirm (disconnect-confirm number Ack-1-

Ack-6) and self-equipment of a data link of the send channel seen from self-equipment, i.e., the send channel from partner equipment, for by timing T5', and a bidirectional data link is judged that cutting is possible. Then, transmission of data is ended from timing T5, and data link cutting processing is performed.

[0041] Although the data link disconnect confirm (disconnect-confirm number Ack-1-Ack-6) of the send channel seen from self-equipment has received and a transmitting-side channel can be cut by timing T6' at a disconnect-request side, flag FwCh-OK which shows that the data link disconnect confirm of a send channel was understood, the disconnect confirm, i.e., the partner equipment, of a receiving-side channel, is not received. However, a transmission frame is not received henceforth [timing T6'] at a disconnect-request side, but after partner equipment checks cutting of a data link by the transceiver channel, it has ended data transmission, ends timing T6 to data transmission ignited by termination of reception of a transmission frame F5 also from a disconnect-request side, and performs data link cutting processing.

[0042] (The second example) The second example of this invention is explained with reference to drawing 5. Drawing 5 is drawing showing the data link cutting sequence by the second example of this invention. In the timing T1 of drawing 5, a disconnect-request side transmits the frame F7 which wrote in data link disconnect-request number Req-1-Req-6. After a disconnect-request-ed side receives the transmission frame F7 which wrote in data link disconnect-request number Req-1-Req-6 The transmission frame F8 which wrote the data link disconnect request (disconnect-request number Req-1-Req-6) and disconnect confirm (disconnect-confirm number Ack-1-Ack-6) from a disconnect-request-ed side in timing T2 is transmitted.

[0043] In timing T3 The transmission frame F7 transmitted to timing T1 in the disconnect-request side Since the transmission frame F8 in which the data link disconnect request (disconnect-request number Req-1-Req-6) from the disconnect-confirm number (Ack-1-Ack-6) side to (disconnect-request number Req-1-Req-6) and a disconnect-request-ed side was written is repeated and it cannot receive normally, After fixed time amount Tm1 progress, in timing T6, transmission of a transmission frame is ended and data link cutting processing is performed.

[0044] The receiving channel seen in timing T5 from the disconnect confirm (disconnect-confirm number Ack-1-Ack-6) and self-equipment of a data link of the send channel seen from self-equipment in the disconnect-request-ed side, Namely, since flag FwCh-OK which shows what partner equipment understood the disconnect confirm of the data link of the send channel from partner equipment for is repeated and it cannot receive normally, After fixed time amount Tm2 progress, transmission of a transmission frame is ended from timing T5, and data link cutting processing is performed.

[0045] Thereby, the transmission quality of a radio-transmission way has deteriorated greatly, and even if reception of a transmission frame F8 is difficult, a data link can be cut certainly and quickly.

[0046] (Example conclusion) according to this invention example -- a transmission line -- Bar -- also when a Stig error exists, a data link can be established or cut quickly and certainly.

[0047] Namely, the number which shows the demand timing of not only a flag but the data link establishment which only identifies a demand or a check to the transmission frame used for a demand and check of data link establishment, By using a frame with the field of the number which shows whether it is the check over the data link establishment demand transmitted to which timing Since round trip delay required for resending control of an error frame can be acquired to bidirectional coincidence in data communication at the time of a linkup and the procedure at the time of data link establishment can be reduced, a transmission line -- Bar -- also when a Stig error exists, a data link can be established quickly and certainly.

[0048] Especially when performing bidirectional data communication by the radio-transmission way, a positive negotiation can be taken and it is effective.

[0049] Moreover, a data link can be cut quickly and certainly by performing cutting processing when the ability not taking the check over a data link disconnect request at the time of data link cutting.

[0050]

[Effect of the Invention] As explained above, according to this invention, the establishment and cutting

of a data link in a radio-transmission way can be performed certainly and quickly. Therefore, an electric wave can be used effectively.

[0051] This invention can realize the data link establishment approach, the cutting process, and the control approach of having been suitable for the radio method.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] Drawing showing the radio method with which the first example of this invention is applied.

[Drawing 2] Drawing showing the configuration of the synchronous establishment frame of the first example of this invention.

[Drawing 3] Drawing showing the data link establishment procedure of the first example of this invention.

[Drawing 4] Drawing showing the data link cutting procedure of the first example of this invention.

[Drawing 5] Drawing showing the data link cutting sequence by the second example of this invention.

[Drawing 6] Drawing showing the example of a synchronous frame structure of the conventional example.

[Drawing 7] Drawing showing the example of a control frame structure of the conventional example.

[Drawing 8] Drawing showing the establishment procedure of a data link used by the radio of the conventional example.

[Drawing 9] Drawing showing the cutting procedure of the data link of the conventional example.

[Description of Notations]

1 Two Communication device

Ack-1-Ack-6 Check number

F1-F8 Transmission frame

FD1, FD2 Information frame

FwCh-OK Flag

L1, L2 Data link

Req-1-Req-6 Demand number

T1-T6, T5', T6' Timing

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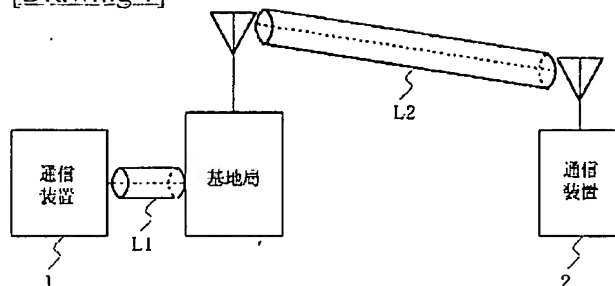
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DRAWINGS

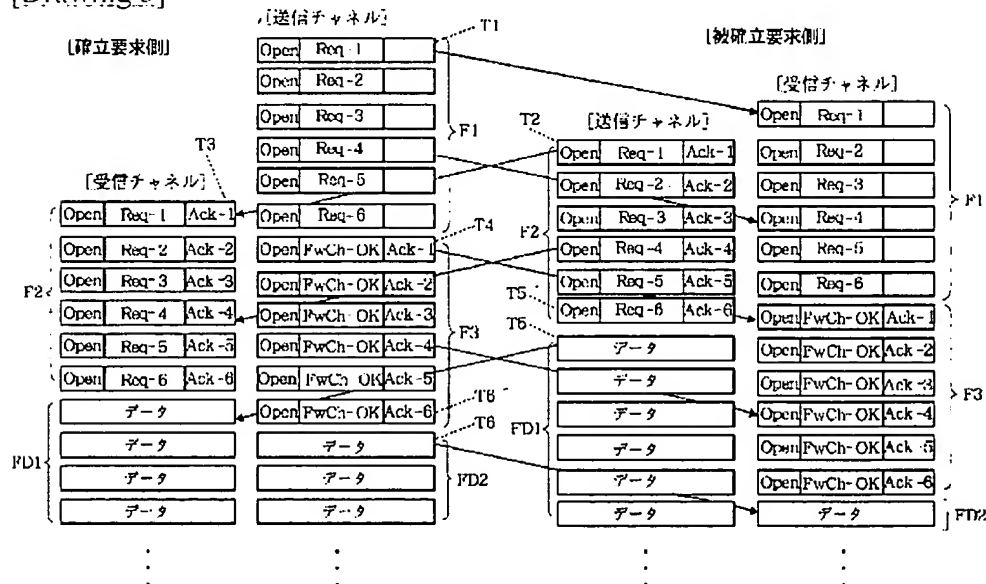
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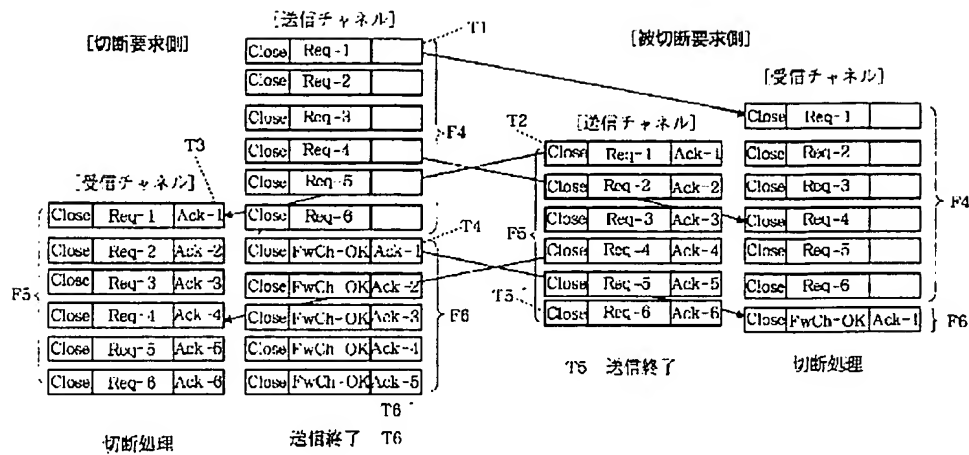
[Drawing 2]

フレーム種別 Open/Close	確認の了承	データリンク 確立要求番号	データリンク 確立確認番号
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[Drawing 3]



[Drawing 4]



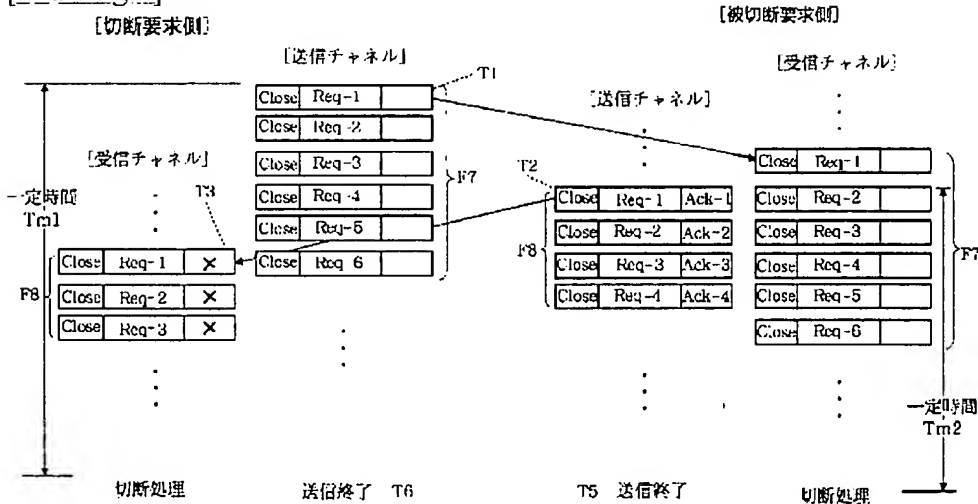
[Drawing 6]

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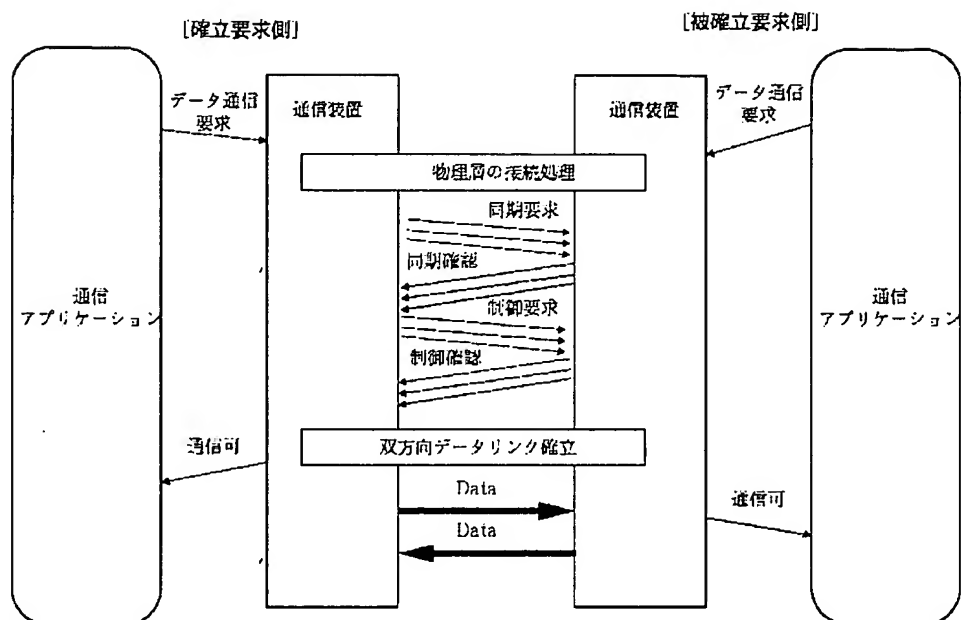
[Drawing 7]

制御情報 (ラウンドトリップディレイ等)

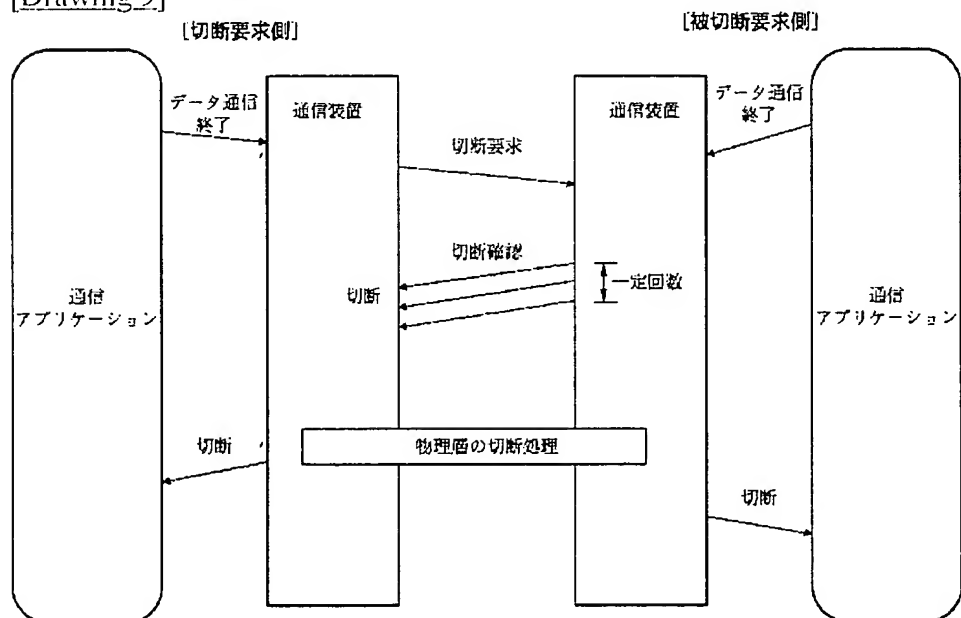
[Drawing 5]



[Drawing 8]



[Drawing 9]



[Translation done.]